



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,166	10/20/2003	Mineo Washima	926530-94967	5974

7590  
Robert F. I. Conte  
Barnes & Thornburg  
P.O. Box 2786  
Chicago, IL 60690-2786

12/18/2006

EXAMINER
----------

ECHELMEYER, ALIX ELIZABETH

ART UNIT	PAPER NUMBER
----------	--------------

1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/18/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

10/689,166

**Applicant(s)**

WASHIMA ET AL.

**Examiner**

Alix Elizabeth Echelmeyer

**Art Unit**

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 1,3,5,7,9,11 and 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,4,6,8,10,12,14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10-20-03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

Art Unit: 1745

## **DETAILED ACTION**

### ***Election/Restrictions***

1. In Applicants' reply on September 26, 2006 to the Office Action of August 3, 2006, claims 2, 4, 6, 8, 10, 12 and 14 were elected without traverse. Claims 1, 3, 5, 7, 9, 11 and 13 are withdrawn. Claims 2, 4, 6, 8, 10, 12 and 14 are pending and are rejected for the reasons given below.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2, 4, 6, 8, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al. (US Patent 6,291,094).

Concerning claim 2, Yoshimura et al. teach an inexpensive and corrosion resistant gas separator made of metal having surfaces covered with two coating layers (abstract). The second, or outer, coating layer is made of a carbon material (column 2 lines 13-14; column 9 lines 9-50).

As for claim 4, the inner layer of Yoshimura et al. corresponds to the joining layer of the instant invention.

Art Unit: 1745

With regard to claim 6, Yoshimura et al. teach that the coating layers may be on the face of the separator that contacts other fuel cell component members (column 2 lines 9-12).

Regarding claim 8, Yoshimura et al. teach that titanium is suitable for the base material of the bipolar plate (column 8 lines 29-36).

As for claim 10, the second, or outer, coating layer is made of carbon (column 2 lines 13-14; column 9 lines 9-50).

As for claim 12, Yoshimura et al. teach that nickel and titanium are suitable materials for the first coating layer (column 8 lines 46-55).

Yoshimura et al. fail to teach the thicknesses for the first and second layers.

Yoshimura et al. teach that the use of the two-layer coating and the materials indicated reduces the overall cost of the separator while providing good corrosion resistance (column 2 lines 15-21).

#### MPEP 2144.05 B. Only Result-Effective Variables Can Be Optimized

A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy).

Since Yoshimura et al. teach the need to provide good corrosion resistance using the coatings while also maintaining low overall costs for the separator, it would have been advantageous to optimize the thicknesses of the layers to provide good corrosion resistance while still keeping costs down.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine the optimal thicknesses of the layers to provide good corrosion resistance while still keeping costs down.

4. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al. as applied to claim 10 above, and further in view of Kunimoto et al. (JP 2000-182640).

The teachings of Yoshimura et al. as discussed above are incorporated herein.

Yoshimura et al. teach that the corrosion resistant coatings may be on the face of the plate that contacts other components of the fuel cell, while the non-contacting portions may be covered with a coating such as silicon oxide or resin (Figure 10; column 2 lines 9-12; column 15 lines 6-19).

Yoshimura et al. fail to teach that the non-contacting portions are covered with titanium oxide.

Kunimoto et al. teach a fuel cell having separators made of a light metal having films of carbon to protect against corrosion and oxidation (abstract, [0011]). Kunimoto et al. further teach that the parts of the separator not covered by carbon may be covered with an oxide, such as one of titanium ([0012]).

Kunimoto et al. teach that this titanium oxide, or other oxide, layer serves as a protective coating to prevent oxidation ([0024]).

Art Unit: 1745

It would be desirable to use titanium oxide, as taught by Kunimoto et al., to coat the non-contacting portions of the separator plate of Yoshimura et al. in order to prevent oxidation.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use titanium oxide, as taught by Kunimoto et al., to coat the non-contacting portions of the separator plate of Yoshimura et al. in order to prevent oxidation.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer  
Examiner  
Art Unit 1745

ae

  
SUSY TSANG-FOSTER  
PRIMARY EXAMINER